



Australian Government

CPCCBS6001 Research and evaluate construction methods and materials for residential buildings to three storeys

Release: 1

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Modification History

Release 1.

This version first released with CPC Construction, Plumbing and Services Training Package Version 1.

Application

This unit of competency specifies the outcomes required to develop an understanding of traditional, new and emerging construction methods and materials, including systems and components for services, for class 1 and 10 buildings as defined in the Building Code of Australia (BCA) and up to three storeys and not more than 2000 square metres in floor area. It involves researching and analysing construction industry information, including research papers, engineering reports, material specifications and performance data; and following information management procedures to ensure that construction methods and materials are evaluated using current and accurate information.

This unit supports the work of building surveyors who provide advisory code-consulting services or authorised statutory services relating to planning or building permit application assessment or building audit and inspection services for class 1 and 10 residential buildings.

Licensing, legislative, regulatory or certification requirements apply to this unit in some States. Relevant state and territory regulatory authorities should be consulted to confirm those requirements.

Pre-requisite Unit

Nil

Competency Field

Building surveying

Unit Sector

Construction

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions.

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|----|---|--|
| 1. | Analyse construction methods for class 1 and 10 residential buildings and structures. | <p>1.1. Sources of information relating to traditional, new and emerging construction methods for class 1 and 10 buildings and structures are identified and evaluated, and information is gathered, stored and updated according to workplace procedures.</p> <p>1.2. Information relating to methods for site investigation and preparation is analysed and recorded.</p> <p>1.3. Information relating to applying different construction methods to foundations and footings is analysed and recorded.</p> <p>1.4. Information relating to applying different construction methods to structural and supporting systems is analysed and recorded.</p> <p>1.5. Information relating to applying different construction methods to enclosing systems is analysed and recorded.</p> <p>1.6. Information relating to applying different construction methods to fire safety is analysed and recorded.</p> <p>1.7. Information relating to applying different construction methods to health and amenity is analysed and recorded.</p> <p>1.8. Information relating to applying different construction methods to safe movement and access is analysed and recorded.</p> <p>1.9. Information relating to applying different construction methods to energy efficiency is analysed and recorded.</p> <p>1.10. Construction process and trade sequencing for different forms of buildings are analysed and recorded.</p> <p>1.11. Construction methods are evaluated in relation to different geographical locations and climatic conditions, and strengths and weaknesses for particular contexts are noted.</p> |
| 2. | Analyse construction materials for class 1 and 10 residential | <p>2.1. Information relating to applying different construction materials to foundations and footings is analysed and recorded.</p> <p>2.2. Information relating to applying different construction</p> |

buildings and structures.	materials to structural and supporting systems is analysed and recorded.
	2.3. Information relating to applying different construction materials to enclosing systems is analysed and recorded.
	2.4. Construction materials are evaluated in relation to different geographical locations and climatic conditions, and strengths and weaknesses for particular contexts are noted.
3. Analyse information relating to service provision for class 1 and 10 residential buildings and structures.	3.1. Information relating to options for energy supply and infrastructure is analysed and recorded.
	3.2. Information relating to options for heating and cooling systems is analysed and recorded.
	3.3. Information relating to options for fire protection is analysed and recorded.
	3.4. Information relating to options for gas and hydraulic service supply and infrastructure is analysed and recorded.
	3.5. Service systems and components are evaluated in relation to different user groups, geographical locations and climatic conditions, and strengths and weaknesses for particular contexts are noted.

Foundation Skills

This section describes the language, literacy, numeracy and employment skills essential to performance in this unit but not explicit in the performance criteria.

Skill	Performance feature
Learning skills to:	- critically evaluate the validity and reliability of information relating to construction methods and materials based on the source and author of the information, the research methodology used to develop the data, and the currency of information - independently source, access and navigate construction industry information, including the National Construction Code (NCC), to find information relating to construction methods, materials and service provision for class 1 and 10 buildings - use systems for ordering, classifying and storing reference

This section describes the language, literacy, numeracy and employment skills essential to performance in this unit but not explicit in the performance criteria.

Skill	Performance feature
	materials and research information for easy retrieval.
Numeracy skills to:	• extract and analyse a broad range of mathematical information from laboratory test reports or research papers relating to the performance and characteristics of construction materials, including: • fractions, decimals, percentages, ratio, rates and proportions • statistical data in complex tables, spreadsheets and graphs • interpret 2-D and 3-D shapes, including: • compound shapes representing the structure of construction materials • examples of how materials are used for different construction methods • use mathematical language relating to properties of materials when discussing findings from research, including fire ratings and load bearing capacities.
Oral communication skills to:	• ask technical questions to clarify information concerning the scope and limitations of different construction methods • consult with manufacturers and make enquiries to extend or clarify research into construction materials and service provision.
Reading skills to:	• locate and interpret complex information about construction methods and material characteristics and properties • understand specialised NCC terminology.
Writing skills to:	• record research findings and add to research over time • record data about construction materials in text, table and diagram format.

Range of Conditions

This section specifies work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are

included. Bold italicised wording, if used in the performance criteria, is detailed below.

Site investigation and preparation must include:

- principles and practices of site establishment, including:
 - drainage
 - earthworks
 - pest risk management
- soil investigation, assessment and clarification.

Structural and supporting systems must include:

- masonry systems:
 - earthwall construction
 - reinforced and unreinforced masonry
 - weatherproofing
- systems for:
 - floors
 - roofs
 - sub-floor ventilation
 - walls
- steel framing
- systems for cyclone category areas
- timber framing.

Enclosing systems must include:

- glazing
- gutters and downpipes
- roof cladding
- wall cladding.

Fire safety must include:

- clearances and protection from heating appliances
- fire separation
- requirements for bushfire areas
- smoke alarms.

Health and amenity must include:

- facilities
- light
- room heights
- sound insulation
- ventilation
- wet areas.

Safe movement and

- balustrades

access must include:

- stair construction
- swimming pool access, if required.

Energy efficiency must include:

- air movement
- building fabric
- building sealing and insulation
- external glazing
- services.

Information relating to applying different construction materials must include four subsets from each of the following two main areas:

- range of construction materials in common use, including:
 - adhesives and sealants
 - admixtures
 - clay products
 - concrete and concrete products
 - glass
 - masonry
 - metal
 - mortar for load bearing walls
 - new relevant proprietary materials
 - plaster and plasterboard
 - plastic
 - pre-stressed structural concrete components
 - protective and fire-rated protective coatings
 - timber and timber products
 - waterproofing
- suitability of materials for different applications, including:
 - behaviour under stress
 - compatibility with other materials in use
 - cost-effectiveness
 - durability
 - energy efficiency
 - environmental impact
 - fire resistance
 - standards
 - structural suitability
 - sustainability
 - visual characteristics.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

Assessment Requirements for CPCCBS6001 Research and evaluate construction methods and materials for residential buildings to three storeys

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Performance Evidence

A person demonstrating competency in this unit must satisfy all of the elements, performance criteria and foundation skills of this unit. The person must develop and maintain current research findings to support building surveying services for three different buildings or structures not more than 2000 square metres in floor area in classes 1 and 10 as defined in the Building Code of Australia (BCA), where:

- two of the buildings must be in class 1 and three storeys
- one building must be in class I and less than three storeys, or in class 10
- each building must be in a different climatic, geographic or planning zone.

In doing the above, the person must also produce a research report containing research findings, recommendations and supporting evidence for each of the above building projects, based on an evaluation of:

- characteristics and applications of a range of materials suitable for the structural elements and building envelope
- different construction methods and systems applicable to the structural elements and building envelope
- components and systems for services that consider:
 - relevant compliance requirements
 - installation methods.

The person must also be able to demonstrate a process for:

- seeking feedback on and distributing findings from each of the three research reports
- maintaining the currency of research findings in each report.

Knowledge Evidence

A person demonstrating competency in this unit must demonstrate knowledge of:

- characteristics and applications of materials suitable for structural elements and building envelope

- compliance requirements relating to construction materials and methods for class 1 and 10 buildings and structures, including:
 - Australian standards
 - National Construction Code (NCC) requirements
- construction methods and systems applicable to:
 - site preparation
 - structural elements
 - building envelope
- components and systems for services, including:
 - compliance requirements
 - installation methods
- sources of reliable information on traditional, new and emerging uses of construction materials and methods
- structural engineering principles sufficient to interpret and apply the requirements of the BCA.

Assessment Conditions

Suitable assessment of performance requires:

- equipment:
 - computer with internet access and business software currently in use in building surveying practices
- materials:
 - documentation for the three projects specified in the performance evidence
- specifications:
 - access to relevant and current building control legislation, regulations, codes and standards and state, territory or local authority planning policies.

Assessor requirements

Assessors must satisfy the assessor requirements in the *Standards for Registered Training Organisations* (RTOs) current at the time of assessment.

In addition, assessors must also demonstrate current membership of a relevant industry association and have current registration on the National Building Professionals Register in the Building Industry Control category (level 1) or be accredited under the Australian Institute of Building Surveyors (AIBS) National Accreditation Scheme at Building Surveyor level.

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